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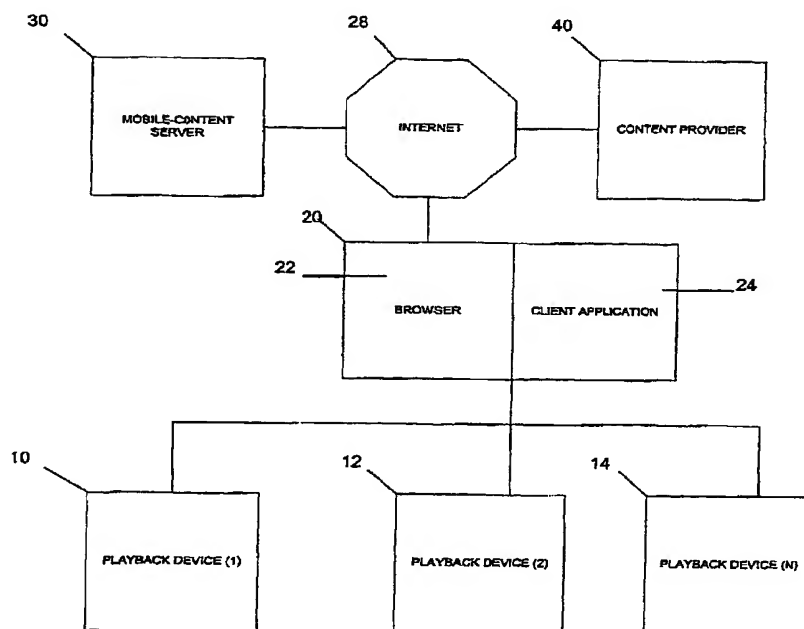
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(54) Title: **INTERACTIVE AUDIO AND DATA PLAYER FOR DELIVERY OF SELECTED CONTENT TO A MOBILE USER AND OBTAINING A RESPONSE THEREFROM**



(57) Abstract: A playback device for storing and delivering audio and text content to a user. A local computer delivers customized content to the playback device via a wireless signal, such as a wireless local or wide area network. The local computer can receive content using a predesigned profile that downloads content from the Internet at one or more content provider web sites and/or a database. The playback device generally comprises a housing, an LED display, a set of programmable buttons, including a response button, an audio delivery device, such as a speaker or headphone jack, a microphone and a set of inputs and outputs. The electronics of the device include a microprocessor and system bus which couple to a microcontroller and power source, memory (volatile and nonvolatile), display device, an I/O connector, compact flash, and a docking connector. The microprocessor is

connected to an MP3 decoder, a codec, and audio delivery devices. A number of possible optional modules can be connected to the playback device, such as a cellular telephone, global positioning device, security or system monitoring device, or the like. The buttons permit a user to power on/off the device, listen, fast forward and reverse, select category, start/stop/pause delivery, and control volume. There is also a response button which, when actuated by the user, enables subsequent processing and upload to the local computer of an instruction for more information or for purchasing an advertised product.



*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

5 INTERACTIVE AUDIO AND DATA PLAYER FOR DELIVERY OF  
SELECTED CONTENT TO A MOBILE USER AND OBTAINING A  
RESPONSE THEREFROM

#### CROSS-REFERENCE TO RELATED APPLICATION

10 This application is related to copending U.S. application Serial No.  
\_\_\_\_\_, entitled "A SYSTEM FOR AND METHOD OF  
IMPLEMENTING A CLOSED LOOP RESPONSE ARCHITECTURE FOR  
ELECTRONIC COMMERCE" filed on even date as the present application  
and commonly assigned to I2GO, Inc., the assignee of the present invention;  
15 the disclosure of such copending application is incorporated by reference in its  
entirety herein.

#### FIELD OF THE INVENTION

The present invention relates to apparatus and software for delivering  
customized audio and text content from a central location to a least one  
20 apparatus at a remote location and for provision of feedback pertaining to  
received information and advertisements to initiate electronic commerce  
transactions. More particularly, the present invention relates to an audio, data  
and text player that receives and stores audio and text information based on a

user subscription profile for replay and processing at a later time or as it is received such that the subscriber can selectively choose which audio or text information to replay. The subscriber can also interactively instruct the apparatus to perform certain operations on the data, such as request more  
5 information.

## BACKGROUND OF THE INVENTION

The Internet provides extensive and global access to information and opportunities for electronic commerce that did not exist just a few years ago. Until recently, access to the Internet was limited to those computers having  
10 access to a communication link, such as a telephone line, a high speed connection, such as ISDN, DSL or ADSL, a cable modem, a T1 line or the like. Thus, access to information through the Internet was restricted to locations that were in close proximity to such a communication link, typically the home or the office.

15       Recent advances in wireless technology expand the ability to access information over the Internet beyond such limitations. However, most of the present techniques employed to expand this access are inadequate or inefficient in the ability to deliver Internet based information. One technique of providing wireless access to the Internet is through use of cellular capable  
20 modems coupled to cellular telephones. However, wireless access to the Internet through the use of a cellular capable modem is slow, clumsy and unreliable due to frequent dropouts, particularly when traveling between one cell and an adjacent cell. Another technique of providing wireless access to the Internet is through a wireless modem. However, the use of a wireless modem

is inefficient due to the high expense associated with the hardware, and the fees levied by carriers, such as the monthly service charge and the fees assessed for downloading content. Furthermore, accessing the Internet using any of the aforementioned techniques ties up communications facilities and resources that may be required by a user for other purposes and is  
5 inconvenient, or even dangerous, for a user that is occupied with other tasks, such as driving an automobile, operating machinery, or working. Thus, there is a need in the art for a system and method for receiving information from the Internet that does not tie up communications facilities and is more convenient  
10 for a user. Wireless communication is possible for the conceived environment, but, it would be desirable to have a reliable system for transmitting and receiving content and responses thereto.

One technique to address these needs in the art has been utilized in palmtop devices, such as the Apple Newton Messagepad 2000 (available from  
15 Apple Computers, Cupertino, California) and Palm III and successive generations of products (available from 3Com). These palmtop devices offer services whereby a user can download Internet content from a web site to a personal computer, and then to the palmtop device for later off-line viewing. These palmtop devices only provide the simple one way exchange of data,  
20 from the web site to the user. The palmtop devices do not allow for any interaction with the web site and give no opportunity for feedback from the user to the web site. In addition, these devices provided information in a text only format. Thus a user that is driving in his or her car cannot safely read the text from the palmtop device. Thus, there is a need in the art for a system and

method for downloading content from the Internet, delivering the content to the user, and allowing for responses to the content from the user to be returned to the content provider or the web site. There is also a need in the art for a system and method that will deliver audible Internet content to a user, as well as delivering textual content in a spoken manner, thus enabling a user to listen to a the content of a web site and respond to that content.

From a commercial perspective, much benefit could be obtained through the delivery of audible advertisements to a user. For instance, a company that provides audible content to a user may be able to provide this service at no cost if businesses were allowed to interject advertisements into the audible content. Users of mobile web reading devices are an untapped market for goods and services. In addition, after delivering an advertisement to a user of a portable reading device, the ability to receive feedback from the user regarding the advertisement would be very beneficial. Presently in the art, there is no such system or method that allows a user to react upon hearing or reading an advertisement. The impulse buyer is lost to these potential electronic commerce transactions. It is well known that directed advertising is more productive and cost efficient than blind advertising. It would therefore be beneficial for an advertiser to receive demographic information and feedback response information about an Internet user or audience and provide advertisements in accordance with this information.

Thus, there is a need in the art for a system and method that will allow advertisements to be inserted into downloaded web content for delivery to a user's playback device and will allow for responses to those advertisements to

be returned back to the advertisers. There is also a need in the art for a system and method that will target the advertisements to particular users based on feedback information from a user and user demographic information that matches a demographic profile for an advertisement.

5           One technique to download a program of Internet information for user playback that does not require the use of communications facilities during playback, is to download the information at a time prior to the desired playback time. In this type of a system, as well as in other embodiments, it is desirable to include a system and a method that allows a user to specify the  
10 particular content, categories of content, or the general nature of the content desired. In particular, it is desirable for the user to be able to compose a program either directly, or through entering profile information that can be examined and used to direct the composition of the program. In addition, for a program that has been composed based on the profile information (a "baseline  
15 program"), it is desirable to allow the user to alternate the baseline program, either partially or in its entirety. It is desirable for the ability to alternate the baseline program to include the ability to add, delete, or rearrange particular segments of the baseline program. Thus, there is a need in the art for a system and a method for providing web content programming that allows a user: to  
20 directly control the composition of the program; to guide the composition of a program by providing user profile information; and to alter the program by adding, deleting or rearranging the content of the program.

Therefore, it has been shown that there is a need in the art for a system and a method that constructions information content programming from the

Internet and provides the delivery of programming in an audible form, that may include advertising information, and that can receive user feedback and demographic information to base the content of the programming and the advertisements.

5           Portable devices have been developed for storage and later playback of content, such as that described in U.S. Patent No. 5,914,941, issued to Janky. However, the ability of the device to provide user feedback and instructions for later upload to a server or local computer does not exist or is severely limited in function. It would be desirable to have a playback device which  
10   could receive customized content, including audio and text material, and store such content in nonvolatile memory. Such a device would allow for later playback using a set of programmable buttons for listening and navigating by scrolling or skipping through various categories of content. Also, there is a need for a playback device that incorporates a user interface, such as a button  
15   on the device, which would permit a user to send a signal in response to a content segment, such as an article to obtain more information, or an advertisement with a buy or "order now" prompt which would allow the user to indicate a buy signal. Such an information or buy (or other) signal would be recorded in the proper location so that when the playback device is in  
20   communication with the local upload device it transmits in compressed or other form the response signal information for further upload to the Internet and the publication or advertiser for processing.



## SUMMARY OF THE INVENTION

In a preferred embodiment the present invention provides a playback device for storing and delivering audio and text (and possibly video) content to a user. A local computer delivers customized content to the playback device via a wireless signal, such as a wireless local or wide area network. The local computer can receive content using a predesigned profile that downloads content from the Internet at one or more content provider web sites and/or a database.

The playback device generally comprises a housing, a display, such as LED, LCD or the like, a set of programmable buttons, including a response button, an audio delivery device, such as a speaker or headphone jack, a microphone and a set of inputs and outputs. The electronics of the device include a microprocessor and system bus which couple to a microcontroller and power source, memory (volatile and nonvolatile), display device, an I/O connector, compact flash, and a docking connector. The microprocessor is connected to an MP3 decoder, a codec, and audio delivery devices. A number of possible optional modules can be connected to the playback device, such as a cellular telephone, global positioning device, security or system monitoring device, or the like.

The buttons permit a user to power on/off the device, listen, fast forward and reverse, select category, start/stop/pause delivery, and control volume. There is also a button which actuates a response. Alternatively, the user can use the microphone to speak instructions or messages into a memory storage device for later upload to the local computer.

Accordingly, it is a principal object of the present invention to provide a device for playback of previously stored audio and data content that is downloaded from a remote site.

It is another object of the present invention to provide a device which  
5 can be instructed to playback selected portions of a packet or packets of content depending on the user's preference.

It is a further object of the present invention to provide a device which incorporates a response button which enables a user to provide stored instructions which can be later uploaded to the content provider for further  
10 processing of the instructions.

Other objects, features, and advantages of the present invention will become apparent upon reading the following detailed description of embodiments of the invention, when taken in conjunction with the accompanying drawings and the appended claims.

## 15 BRIEF DESCRIPTION OF THE DRAWINGS

The invention is illustrated in the drawings in which like reference characters designate the same or similar parts throughout the figures of which:

Fig. 1 is a schematic diagram of the environment of the playback device and the mobile-client server;

Fig. 2 is a perspective view of a preferred embodiment of the playback device of the present invention;

Fig. 3 is a schematic top view of the playback device;

Fig. 4 is a schematic bottom view of the playback device;

Fig. 5 is a schematic left side view of the playback device;

Fig. 6 is a schematic right side view of the playback device;

Fig. 7 is a schematic front view of the playback device;

Fig. 8 is a schematic rear view of the playback device;

Fig. 9 is a system diagram of the hardware components of the playback device including a dashed line showing the connection of optional components to the system bus; and

Figs. 1 - 16 are flow diagrams of the programmable button interfaces.

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## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Fig. 1 illustrates an environment in which the present invention is utilized. At least one playback device 10 (optional additional playback device  
5 (2) 12 and playback device (N) 14 are shown for convenience) is able to communicate with a mobile-client server computer 20, which contains a microprocessor, at least one memory storage device and other typical computer components, all not shown, which are known to those of ordinary skill in the art, a browser 22 for interfacing with the Internet 28 or other  
10 communications or information network, such as intranets, and a client

application 24. A mobile-content server 30, and one or more content providers 40 also interface with the Internet 28. A more complete description of the architecture of the computer 20, the mobile-client server 30, and the content provider 40 are found in the copending application referenced above.

5           Figs. 2-9 shows a playback device 10 having a housing 102, within which are a number of components, including a display 104, a speaker grill 106, a battery door 108, a compartment door 110, a window mount 112, a flash card ejector 114, a USB port 116, a power on/off button 118, and a DC power-in jack 120. Instead of a window mount, a belt clip (not shown) can be  
10   used so that the user can clip the playback device 10 to his/her belt, or the like, similar to a personal stereo or tape/CD player (e.g., a Sony® Walkman® or similar device).

          The housing 102 can be made of a rigid material, such as, but not limited to, molded plastic, metal, composite, ceramic wood, mixtures thereof  
15   or the like, and be made in a clamshell or multipart design which can accept various components and be snapped, glued, screwed or welded together.

          The display 104 can comprise an LED, LCID, LCD, cathode ray tube, electro-luminescent, incandescent or other visible light producing technology known to those of ordinary skill in the art or developed hereafter. It is also  
20   possible to adapt the screen display 104 to be a mechanical pin display for using Braille. In a preferred embodiment, the display 104 comprises a 1x8 array of alphanumeric LED units 122. The LED units 122 are preferably covered by a plastic transparent or translucent face 124 to protect the display from environmental contamination (e.g., dirt, smoke, wind, moisture, and the

like) and to provide an aesthetically pleasing appearance. Other components of the display 104 can be indicator lights (not shown) for, as examples, power on, download or upload in process or complete, recording, playback, pause, or the like.

5           The speaker grill 106 consists of a series of openings which permit passage of audio through the housing 102. The battery door 108 is either hingedly attached to or removably associated with the bottom of the housing 102 and can be opened and closed by a user so that a battery can be inserted and changed when necessary. The compartment door 110 is similarly attached  
10           or associated with the bottom of the housing 102 and permits access to the interior of the housing 102 and the electronic components mounted therein, as discussed in greater detail hereinbelow. The window mount 112 can comprise a conventional suction cup or mounting bracket (not shown) for mounting the playback device 10 to a window, dashboard, frame or other object. The flash  
15           card ejector 114 is preferably a button which, when depressed, will eject a PCMCIA or flash card (not shown) which has been previously inserted into a compact flash slot 130.

          Fig. 2 shows a number of programmable buttons which provide one aspect of the user interface with the playback device 10. The following  
20           provides a general description of the buttons and their functions; a more detailed description is provided hereinbelow. In a preferred embodiment there are buttons for power on/off 118, response 140, category 142, reverse 144, pause/play 146, forward 148, volume decrease 150 and volume increase 152.

Other buttons may also be incorporated for more advanced or customized features or functions.

Fig. 9 shows the hardware components of a preferred embodiment of the playback device 10 of the present invention.

A microprocessor 200 is connected by a system bus 202 to a nonvolatile memory device 204 (e.g., flash, hard drive, CD or DVD ROM, micro drive or the like), a volatile memory device 206 (e.g., RAM, SRAM, EDORAM, SDRAM, or the like), a USB chip 208, I/O connector 210, and compact flash 130. The USB chip 208 is also connected to a USB docking connector 212, which comprises a USB 414, audio device 216 and power supply 218, and RS232 220.

10 The microprocessor 200 is also connected to a programmable logic interface 222, which in turn is connected to the system bus 202. The microprocessor 200 is connected to a clock 223 and an MP3 or other decoder 224, which in turn is connected to a codec device 226. Connected to the codec 226 is at least one of several possible audio output devices, including a microphone 228 (which can allow ADPCM, MP# or other algorithm currently known or hereinafter developed for audio recording), a speaker amplifier 230 (which is connected to a speaker 232 (internal or external)), and a headphone amplifier 234 (which is connected to a set of headphones 236).

The microprocessor 200 is also connected to a microcontroller 250 which manages power. The microcontroller is connected to the MP3 decoder 224 and the power source (noted generally as box 218). The power source 218 comprises a linear 252, a linear 254 and a switcher 256. The linear 252 is

connected to an analog source 258, car power 260 (e.g., a 6-15 DCV power source, e.g., a car battery) and USB power 262. The linear 254 is connected to a VCC 264. The switcher 256 is connected to a battery 266, which can be a conventional DC voltage source, photovoltaic, flywheel, or other source of current. The switcher 256 is also connected to the linear 254.

The microprocessor 200 is also connected to a display device 104 and one or more buttons, shown generally at block 280, such as software programmable buttons, such as the buttons 118 and 140-152, and the like, including the response button 140 discussed heretofore and discussed in greater detail hereinbelow. The I/O connector 210 can have one or more modules, shown generally at block 282, connected thereto. Such modules may include, but are not limited to, an RS-232 serial port interface or other serial port interface, a parallel port interface, a universal serial bus (USB), an optical interface such as infrared or IrDA, an RF or wireless interface such as Bluetooth-compatible device, or other interface known to those of ordinary skill in the art. A module can also be a receiver, which can, and preferably is a transceiver for receiving and transmitting content packages from and to the computer 20. Other modules can include a wireless interface (e.g., 100-1,000 MBPS 2.4 GHz ISM band) cellular, pager, global positioning satellite ("GPS"), phoneline modem, extra memory, additional DSP/secure micro, digital compass, navigation hardware and software, remote security and tracking systems (e.g., CarCop®, available from iFleet, Atlanta, Georgia) and the like. Alternatively, a debugging or update port can be included (not shown) for debugging or upgrading the nonvolatile memory 204.

allows addl.  
of timer  
module



The operation and interface of the buttons will now be described. As an overview, a user will have previously set up a user profile with the computer  
5 20 such that content segments are downloaded from the Internet 28 using the browser 22 and assembled into a content package using the client application 24. The content package is communicated to the playback device 10 via any number of communications vehicles, including, but not limited to, RF, cellular, microwave and the like. In a preferred embodiment, a wireless local  
10 area network (WLAN) is used to send a signal with a data packet containing the content package. The transceiver module 282 receives the content package and the nonvolatile PCMCIA or other flash memory device stores the content package for later playback. Likewise, as described in further detail hereinbelow, the transceiver module 282 can also transmit a response from the  
15 playback device 10 to the computer 20 for upload onto the Internet 28, where a database server can receive, store and process the uploaded information. Further discussion of a system and method for delivering such content is discussed in the copending application referenced above. It is possible to have a category button added for selection of the memory device; e.g., flash  
20 memory, hard drive, CD/DVD ROM or the like.

Figs. 10-16 show flow diagrams of the button interfaces. Fig. 10 shows at block 310 that play/pause button 146 is pressed after device power-up (which is achieved by actuating power button 118). At decision block 312 if

the response button 140 is pressed, the process response, indicated at continuation block 314, is shown in Fig. 11, described further below. If the response button 140 has not been pressed, decision block 316 determines whether the category button 142 has been pressed. Category button 142 enables selection of different categories of information content that has been downloaded in the content package. By repeatedly pressing the category button 142, the user can move the display and/or audio playback to different points in the content package, thereby skipping undesired portions. If the category button 142 has been pressed, the process is continued at block 318 and Fig. 12. If the category button 142 has not been pressed, the interface flow moves to decision block 320 and determines whether the forward button 148 has been pressed. If forward button 148 has been pressed, the process is forwarded at block 322 and continues at Fig. 13. If the forward button 148 has not been pressed, decision block 324 queries whether the reverse button 144 has been pressed. If reverse button 144 has been pressed, the process is forwarded at block 326 and continues at Fig. 14. If the reverse button 144 has not been pressed, the process continues at decision block 328, and queries whether the volume increase button 152 has been pressed. If volume increase button 152 has been pressed, the process is forwarded at block 330 to Fig. 15. If the volume increase button 152 has not been pressed, the process continues at decision block 332 and queries whether the volume decrease button 150 has been pressed. If volume decrease button 150 has been pressed, the process is forwarded at block 334 to Fig. 16.

If, at decision block 336, the timer slot ends, the process continues at decision block 338 and queries whether the category has ended. If the timer

slot has not ended, the process restarts at block 310. If the category has ended, then the process moves to the next category at block 340 and the next time slot 342. If the category has not ended at block 338, the process continues at the next time slot 342.

5           Fig. 11 shows the process response if the response button 140 is pressed during play/pause mode. The response button 140 causes the unique identification indicia of the currently active content segment to be recorded in a response file. Turning to the flow diagram of Fig. 11, where the process response block 314 is continued from Fig. 10, in response to an email or  
10   content at block 350, if the response button 140 is pressed, the user is prompted at block 352 to record a reply or to cancel. If a response is recorded at decision block 354, then an email response recording is made at block 356. If no response is recorded, this process exits at 358. If, at decision block 350, there is not a response to an email, decision block 360 queries whether there is  
15   a response to content (i.e., a content segment, part of the content package). If content is playing at block 362 a recording is made and bookmarked at block 364. If no content is playing, the user is prompted at block 366 to record a reply or cancel. If a response at block 368 is recorded, a recording is made at block 370. If not, the process exits at 372. If at block 360, a negative response  
20   is made, decision block 374 queries whether the response is to an advertisement. If not, the process exits at 376. If a positive response is received and content is playing at decision block 378, then a bookmark recording is made at block 380. If not, the user is prompted at block 382 to record a reply or cancel. From decision block 384 a recording can be made at  
25   block 386, or, if not, the process exits at block 388.

Fig. 12 shows the process categories, starting at block 318, continued from Fig. 10. The play list is displayed at block 410, and the audio play list is played at block 412. If the forward button 148 is pressed at decision block 414, the play list selected and then for each press of the button 148, the first and subsequent entries are displayed at block 416. The user presses the play/pause button 146 to listen to each entry selection of content or exits the process when done at block 418. The categories are dynamic following the play list, which allows for the client application 24 to create directories based on user programs. If the play list is not selected at block 414, then the category button can be pressed again at decision block 420. If not pressed the process ends at block 422. If, instead, the play audio category title is selected at block 424, then at decision block 426, if the forward button 148 is pressed and the category is selected, the first and next entries are displayed at block 428. The user presses the play/pause button to listen to the selection, ending this process at block 430. If the category is not selected, and, at decision block 432 the reverse button 144 is pressed, the previous categories are displayed sequentially at block 434 until the user presses the play/pause button 146, ending this process at block 436. If the reverse button 144 is not pressed, the process returns to decision block 420 and the category button 142 can be pressed again.

Fig. 13 shows the process forward from block 322. If the category selection mode is entered at block 510, then at block 512 the user skips to the next selection in the category and exits the process at block 514. If the selection is not made, decision block 516 queries whether there are any more time slots in the category. If there are, the user skips to "next selection in

category at block 518 and ends this process at 520. If there are no more time slots in the category, at decision block 522, if there are more categories, the user skips to the next category at block 524 and exits the process at 526. If there are no more categories, the user exits the process at 528.

5           Fig. 14 shows the process reverse from block 326. At decision block 610 if a category selection is made, then at block 612 the user skips to the previous selection in the category and end the process at block 614. If no category selection is made, decision block 616 queries whether previous time slots exist in the category. If so, then the user can skip to the previous selection  
10   in the category at block 618 and ends the process at block 620. If there are no previous time slots, decision block 622 queries whether there are any more prior categories. If so, at block 624 the user skips to the previous category and ends the process at block 626. If not, the process ends at block 628.

          Fig. 15 shows the process volume increase continuing from block 330,  
15   whereby as the volume increase button 152 is repeatedly pressed and released, or, it can be held down continuously for an interval at block 710, the display 104 shows progressive bars indicating the relative volume. At each progressive volume bar there is an audible beep (block 712) to provide audio feedback to the user. When the desired volume level is reached the button is  
20   no longer pressed and the user exits this process at block 714.

          Fig. 16 shows the process volume decrease continuing from block 334, whereby as the volume decrease button 150 is repeatedly pressed and released, or, it can be held down continuously for an interval at block 810, the display 104 shows progressive bars indicating the relative volume. At each

progressive volume bar there is an audible beep (block 812) to provide audio feedback to the user. When the desired volume level is reached the button is no longer pressed and the user exits this process at block 814.

A typical application of the present invention is for a person who has a home or office computer and wants to listen to customized content at a time that is convenient for him/her, such as when driving, biking, running or walking.

The present invention also provides a method of delivering customized audio and text content from a central location to a remote device, comprising; providing a wireless device; sending a signal containing data from said central location to said remote device; receiving said signal by said remote device; storing said signal in a memory storage device; and, selectively retrieving said data.

An important and novel aspect of the present invention is the incorporation of the response button 140 and the ability to make and upload a response recording file which facilitates interactivity between the user of the playback device 10 and the content provider or database server. Whereas previous audio delivery systems allowed delivery of content, responding to the content has not been effectively and easily provided. With the playback device 10 and response button 140 of the present invention a user can request more information about content heard or watched, initiate a transaction, record a voice response, record a voice response which is converted to text and emailed back, and the like. In various alternative embodiments, more than one response button can be incorporated into the playback device 10 or more complex

individual buttons can be used, such as jog wheels, and the like. The microphone 238 can be used to detect a user's response, so that content providers may offer multiple responses for a given piece of content and the user can respond with one of several possible responses.

5           In an alternative embodiment of the system of the present invention, a plurality of playback devices 10, 12 and 14 (shown as playback device 1, device 2 and device N, where N can represent any number of devices) can be utilized, whereby each device 10 can communicate with the computer 20. In one embodiment, each device 10, 12 and 14 communicates with the computer  
10   using the same frequency and receives the same information. In a second embodiment, each device 10, 12 and 14 is tuned to a different frequency and receives individualized content packages depending on the profile of the person using that particular playback device. For example, in a household comprising a father, mother and two children, each can have a different user  
15   profile and have different content packages downloaded to the playback device 10, 12, 14, etc. Similarly, uploaded information from the playback device 10, 12, 14 is distinctly recognized and received by the computer 20. In another example, where the present invention is used in a fleet of vehicles, such as a number of sales representatives, delivery persons, truck drivers, or the like,  
20   where different information in the content package need be customized and delivered individually to each associated playback device.

In an alternative embodiment the playback device 10 of the present invention can be designed to be a software-generated touch screen responsive product. Such a software product can be incorporated into the current and

future generations of hand-held personal communications systems, personal digital assistants, laptop and notebook computers, kiosks, onboard computer systems, and other mobile or portable systems. In such an embodiment the screen display will have a number of buttons on screen which can be actuated  
5 by touch, light pen, other electromagnetic energy signal (e.g., infrared or laser pen), mouse, voice activated or other response input mode. It may even be possible for the present system to be adapted to for use in a screen display in a pair of glasses, where eye movement and position is monitored and correlated with the button the user is looking at. In such an embodiment, a battery pack  
10 could be contained in the earpiece and the connection to a transmitter in a car or other transmitting site can be wireless, whereby the glasses contain a miniature receiver. A response button can be built into the frame. Also, speakers could be designed to be integrated with the earpieces to provide the audio capability.

15 In another alternative embodiment, a video display device is incorporated into the playback device 10, or linked thereto, so that motion pictures or other images can be displayed. It is possible that the playback device 10 can receive entire movies by interactive selection, and the user can, using the buttons, choose a movie for viewing by a display device. An  
20 example may be for use in a family car or van, where it has become possible to have a small television mounted in the vehicle and children or other passengers can view movies or use games or other interactive programs while the driver is behind the wheel. Additionally, it is possible for the playback device 10 of the present invention to be modified to be able to playback  
25 multiple channels of content simultaneously, so that one channel may be for



music delivered to the teenager in back with a pair of headphones (such as, but not limited to, by a content package containing audio streaming, customized digital audio using MP3 or other formats, or the like), a second channel may be for a children's game, interactive software, movie or television show  
5 previously downloaded from the Internet 28, and a third channel may be for the driver to listen to the latest news or traffic conditions.

It is to be understood that while the present discussion of playback implies that the content package is downloaded in one or more packets and replayed, it is also possible for the content package to be downloaded in real  
10 time to the playback device 10 so that the user can receive and hear the content as it is being communicated, rather than requiring a large memory storage device for holding all the information. This may be useful where the playback device 10 remains within the WLAN broadcast area, such as at the backyard pool, workout area or within a walking distance, or the like.

15 The present invention can also be used in a commercial environment, such as in a health club or exercise facility, where the members can check out a playback device from the membership desk, enter their user ID code by means of an input device (e.g., numbered wheels, digital display and associated buttons, voice recognition or command, or the like), and receive  
20 customized content (e.g., preferred types of music or talk content) while working out. The playback device of this embodiment can be modified to incorporate information on the display about the user's intended workout schedule and goals. The information would be contained in a local server located on site or off site and transmitted to the playback devices by a wireless

local or wide area network. Motivational support content can be customized to be delivered as the user approaches each workout station by having a proximity sensor and transmitter in the playback device and the workout apparatus.

5           The present invention can be adapted for use as an interactive training and educational aid whereby content in the form of training or educational material (such as, but not limited to, technical product updates, training materials, product documentation, educational materials, and the like) is downloaded from the mobile-content server computer 20 to the playback  
10   device 10. The information is thus disseminated to a salesperson or a group of sales agents in a sales training environment, but in a uniquely interactive way. There may be a test or quiz at the end of the content segment requiring that the user answer various test questions, such as true/false or multiple choice by using the response button. Alternatively, questions requiring a verbal response  
15   can be used whereby the response button is actuated which actuates a microphone 228 and records into the memory the user's spoken response. This is later uploaded to the mobile-content server computer 20 for further processing.

          A further advantage of the present invention in the context of a training  
20   aid is that required material is listened to and a response required at a particular place in the content segment is requested from the listener to ensure that the listener has actually heard all of the material. As such, the present invention provides a high degree of quality assurance and compliance because the user can only enter a response if he or she has listened to the entire content

segment. To anticipate a person fast forwarding to the response prompt location, the present invention can incorporate software, known to those of ordinary skill in the art, which captures button stroke activity. Such data can be uploaded with the response information and suspect activity, such as very frequent actuation of the fast forward button or excessive use of the volume decrease button, will alert a monitor that the specific user may be attempting to avoid listening to the entire content. Accordingly, the present invention could be used by those taking a correspondence course, where the weekly lesson is downloaded from the Internet onto the mobile-content server computer 20 and downloaded in turn onto the playback device 10. As the user listens to the lesson, there may be points in the content segment where a chapter quiz needs to be responded to by actuating the response button. In such an embodiment, the present invention can be adapted to include a plurality of response buttons, such as but not limited to, a button for each multiple choice answer.

While the invention has been described in connection with certain preferred embodiments, it is not intended to limit the scope of the invention to the particular forms set forth, but, on the contrary, it is intended to cover such alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims. The disclosures of all patents, patent applications, and publications referred to herein are incorporated by reference in their entirety.

## CLAIMS

Claimed is:

1. An apparatus for receiving and delivering audio and data content, comprising:
  - 5 a. a microprocessor;
  - b. a memory storage device;
  - c. a power supply;
  - d. a user interface comprising at least one programmable button;
  - e. means for presenting data to a user;
  - 10 f. means for interfacing said microprocessor to a source of audio and data content;
  - g. means for providing a user operable interface with said microprocessor so as to permit a user to issue an instruction based on the content received such that said instruction is stored in said memory storage device and said instruction is  
15 capable of being transmitted to a mobile-content server; and,
  - h. a housing.
2. The apparatus of Claim 1, further comprising means for delivering audio content to said user;

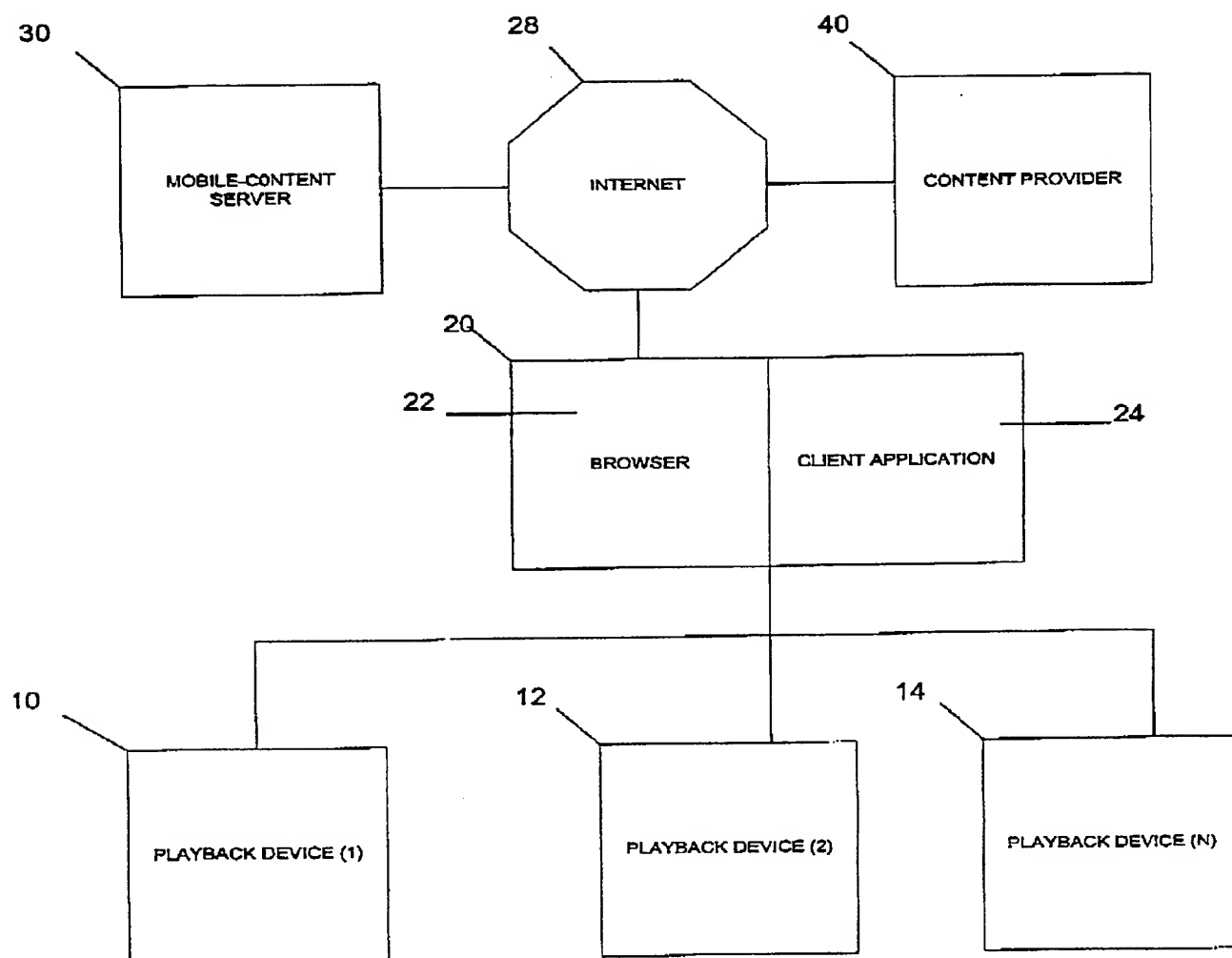
3. The apparatus of Claim 2, further comprising a means for controlling the volume of said speaker.
4. The apparatus of Claim 1, further comprising a port for accessing software contained in said microprocessor.
- 5 5. The apparatus of Claim 1, further comprising a clock circuit associated with said microprocessor.
6. The apparatus of Claim 1, further comprising a microphone.
7. The apparatus of Claim 1, further comprising a docking port.
8. The apparatus of Claim 1, further comprising an input/output bus  
10 module comprising a wireless interface.
9. The apparatus of Claim 1, wherein said microprocessor has between about 2 bit and about 2 Mbit SRAM.
10. The apparatus of Claim 1, wherein said microprocessor has between about 1 bit and about 16 Mbit flash.
- 15 11. The apparatus of Claim 1, wherein said microprocessor has a programmable operational speed of between about 100Khz and about 25MHz.
12. The apparatus of Claim 1, further comprising a user interface button, said button being capable of generating a signal to said microprocessor  
20 which will issue an instruction.

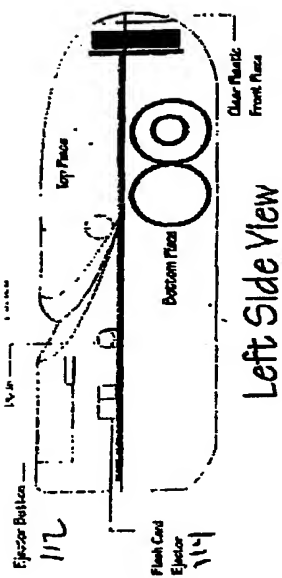
13. The apparatus of Claim 1, wherein said memory storage device can receive and store audio and text information for later recall and usage.
14. The apparatus of Claim 1, wherein said power supply comprises at least one battery.
- 5 15. The apparatus of Claim 1, wherein said power supply comprises a source of DC voltage.
16. The apparatus of Claim 15, wherein said source of DC voltage is between about 6 and about 15 Volts.
17. The apparatus of Claim 1, wherein said power supply is a photovoltaic  
10 cell.
18. The apparatus of Claim 1, wherein said user interface is at least one software programmable button.
19. The apparatus of Claim 1, wherein said data display means is an LED array.
- 15 20. The apparatus of Claim 1, wherein said data display means is an liquid crystal intensity display (LCID) array.
21. The apparatus of Claim 1, wherein said interfacing means comprises a wireless network.
22. The apparatus of Claim 21, wherein said wireless network is a local  
20 wireless network.

23. The apparatus of Claim 21, wherein said wireless network is a wide area wireless network.
24. The apparatus of Claim 1, wherein said display is a set of mechanical pins for displaying Braille characters.
- 5 25. The apparatus of Claim 1, wherein said housing comprises an eyeglass from having a power source contained within said frame, said display is a head up display projected onto at least one eyepiece, and said speaker is at least one speaker associated with at least one earpiece.
26. The apparatus of Claim 1, further comprising an MP3 player associated  
10 with said apparatus.
27. The apparatus of Claim 1, further comprising wireless interface module associated with said apparatus.
28. The apparatus of Claim 27, wherein said wireless interface is a Bluetooth-compatible device.
- 15 29. A system for delivering customized audio content from a central location to a plurality of playback devices, comprising;
- a. a plurality of playback devices;
- b. a central computer having a memory storage device capable of receiving and storing customized audio and/or video content;
- 20 and,

- c. a means for communicating said content from said central computer to said plurality of playback devices.
30. A method of delivering customized audio and text content from a central location to a remote device, comprising:
- 5 a. providing a wireless device;
  - b. sending a signal containing data from said central location to said remote device;
  - c. receiving said signal by said remote device;
  - d. storing said signal in a memory storage device; and,
  - 10 e. selectively retrieving said data.
31. The method of Claim 29, wherein each of said playback devices has a receiver associated therewith that is tuned to a distinct frequency for receiving from said central location content customized for the specific user of each of said plurality of playback devices.

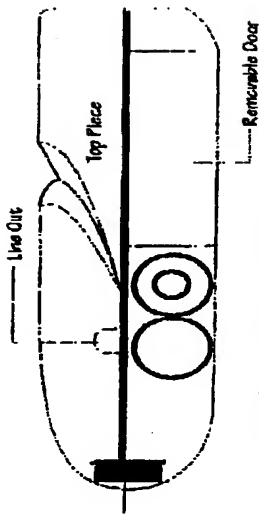


**FIG. 1**



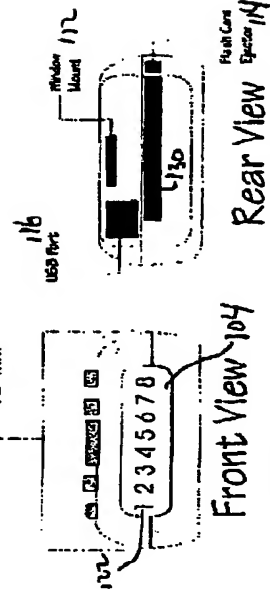
Left Side View

FIG. 5



Right Side View

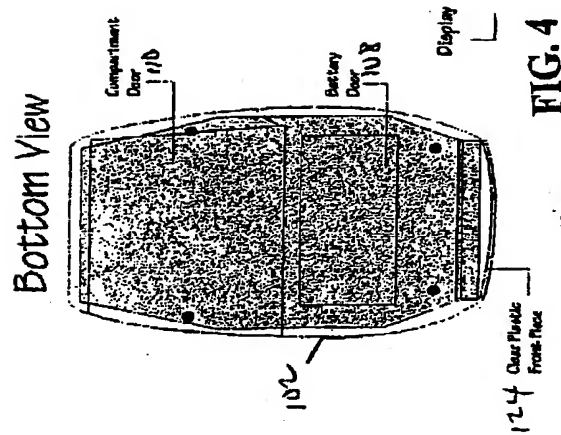
FIG. 6



Front View

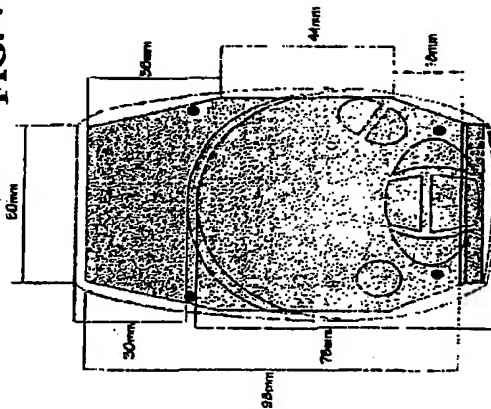
FIG. 7

FIG. 8



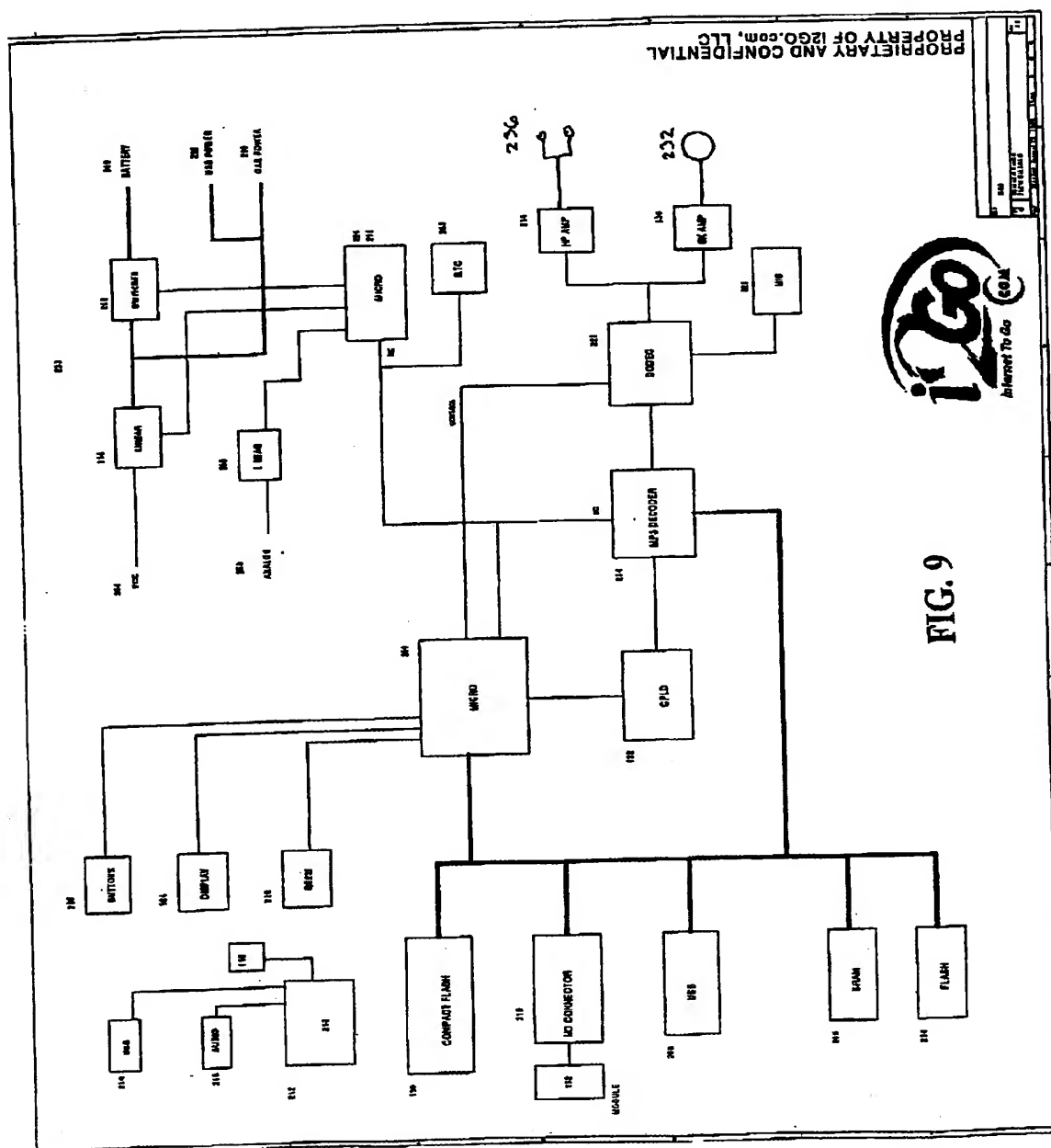
Bottom View

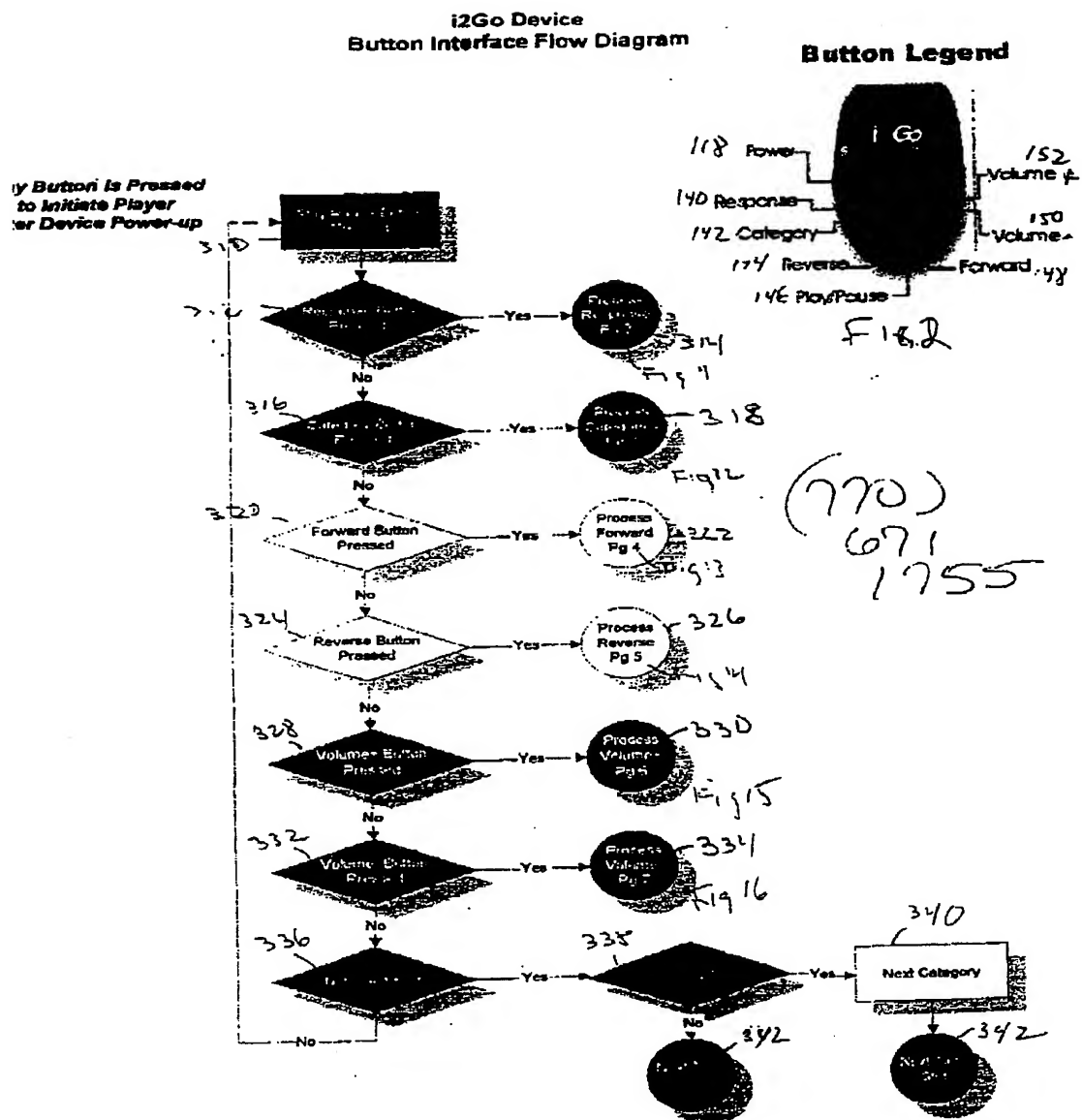
FIG. 3



Top View

FIG. 4





Process Response  
From Page 1

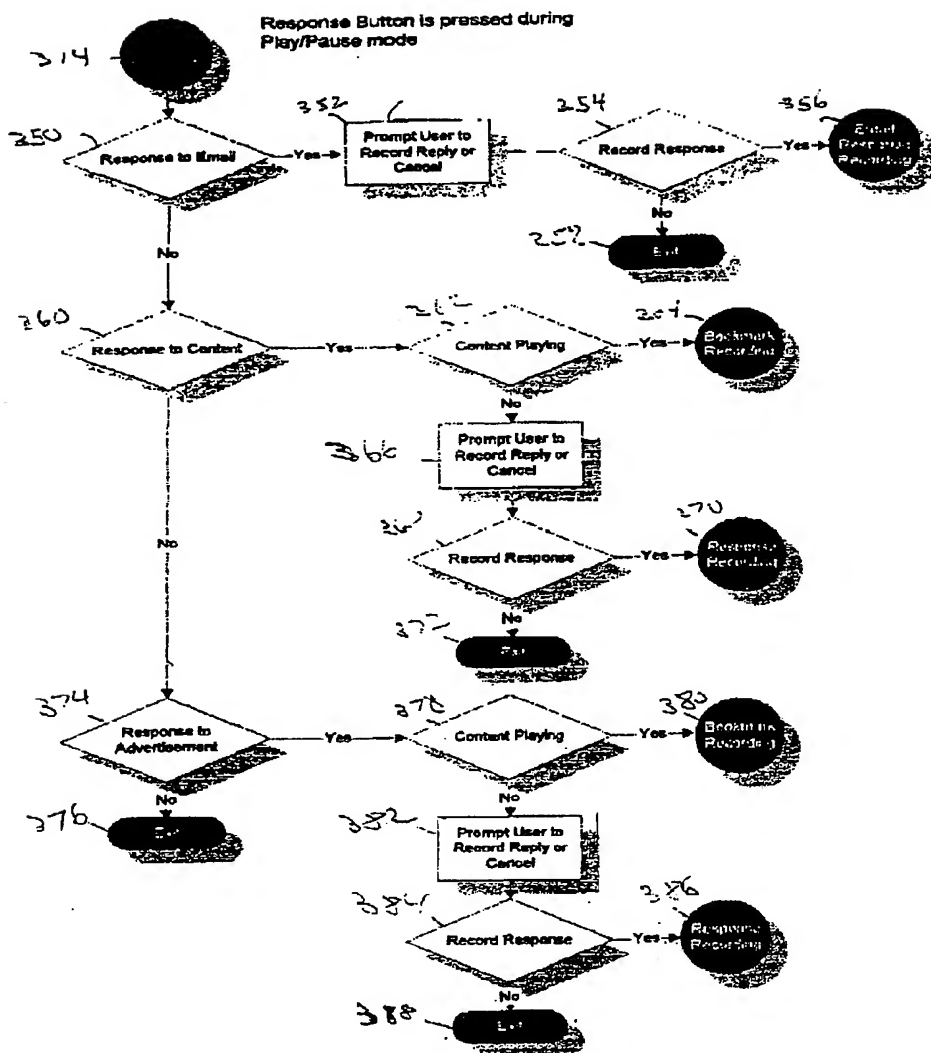


FIG. 11

Process Categories  
From Page 1

Note: Categories will be dynamic following the playlist. This allows for the PC Client app to create directories based on user Programs.

Actions: After Category button has been pressed

Live Buttons:  
Forward  
Reverse (After Forward as been pressed)

Play/Pause  
Power

Lead Buttons:  
Response  
Volume+  
Volume-

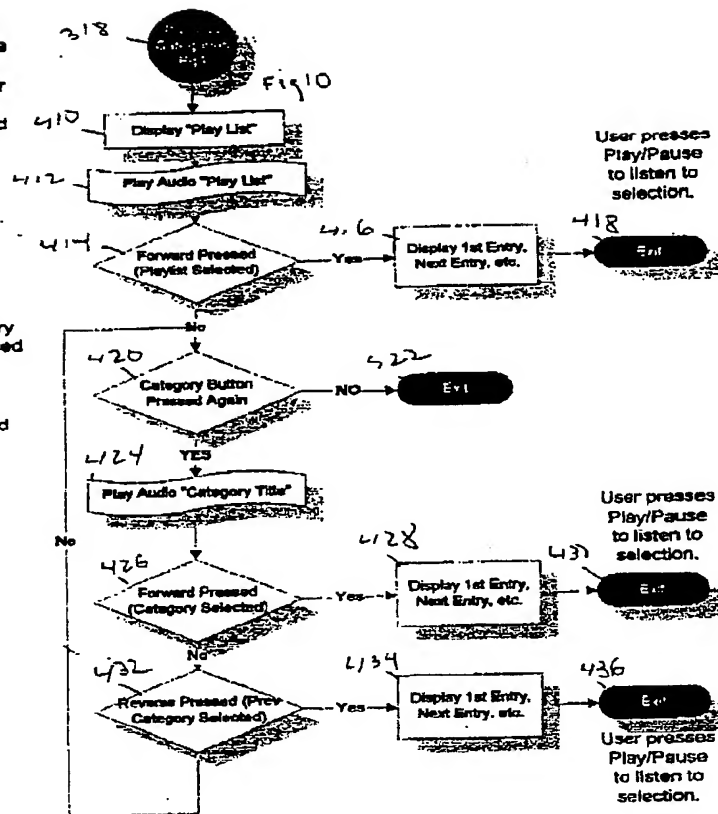


FIG. 12

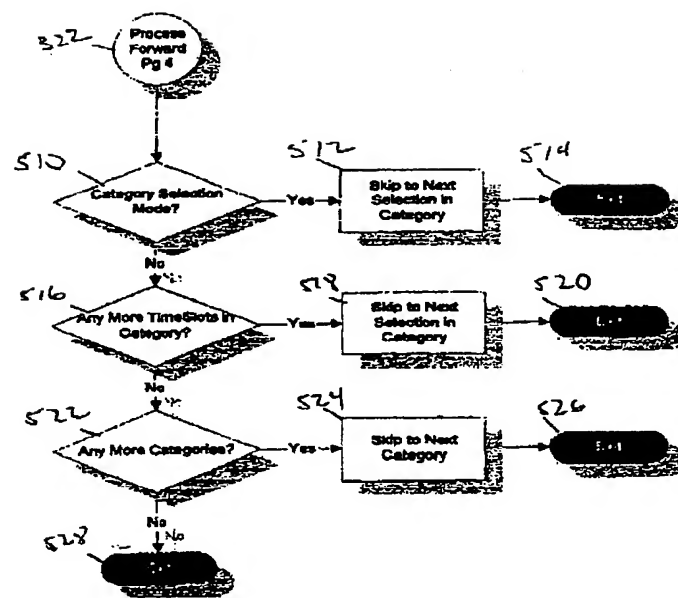


FIG. 13

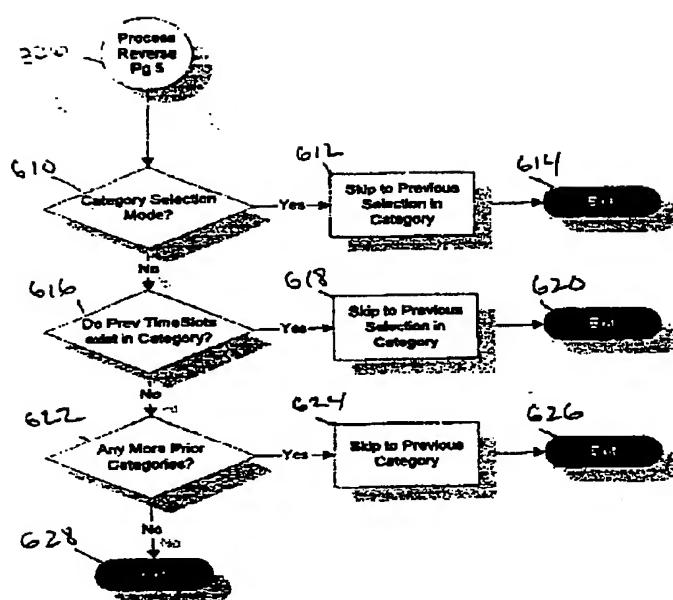


FIG. 14



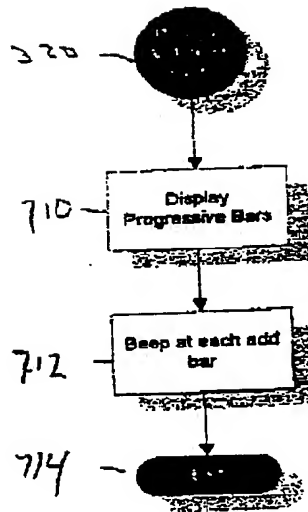
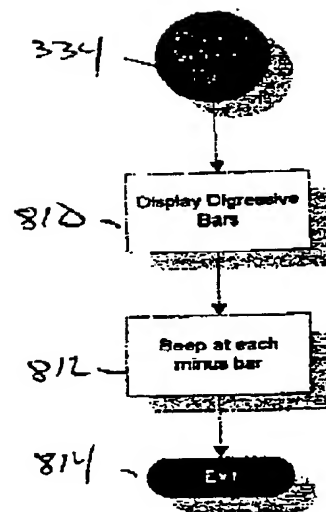


FIG. 15

**FIG. 16**